

Sediment Management Work Group
Comments On The United States Environmental Protection Agency's
Proposed Plan For The In-River Portion Of The Portland Harbor Superfund Site

U.S. EPA Region X

September 6, 2016

I. Introduction

The Sediment Management Work Group (“SMWG”)¹ appreciates the opportunity to provide comments to the United States Environmental Protection Agency (“U.S. EPA”) on the Proposed Plan For The In-River Portion of the Portland Harbor Superfund Site (“Proposed Plan”) dated June 2016, which addresses river mile 1.9 to river mile 11.8 of the lower Willamette River (“the Site”). The SMWG has long advocated a national policy addressing contaminated sediment issues that is founded on sound science and risk-based evaluation of contaminated sediment management options. Accordingly, the SMWG has strongly supported the substance of and consistent application of the U.S. EPA’s 2005 Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (U.S. EPA 2005) (the “Sediment Guidance”) to all sediment sites nationally. The SMWG recognizes that the management of sites involving contaminated sediments frequently involves unique and complex scientific and technical issues, including assessment methodologies and evaluation of risk and risk reduction options. The SMWG believes that the Sediment Guidance was an important first step in that direction. In

¹ The Sediment Management Work Group is an ad hoc group of a diverse cross-section of industry (auto, aerospace, chemical, paper, paint, pharmaceutical, and utilities, among others), port authorities and government parties actively involved in the evaluation and management of contaminated sediments. (See Exhibit “A” for a list of its Members.)

addition, the findings, conclusions and recommendations of the NAS Report, “Sediment Dredging at Superfund Megsites: Assessing the Effectiveness” (NAS 2007) should be factored into the evaluation of options for the Passaic River. As an active participant in the national discussions on sediment management issues, the SMWG welcomes the opportunity to offer comments on the Proposed Plan.

The Proposed Plan fails to provide a meaningful evaluation of a full range of remedial alternatives, which is contrary to the National Contingency Plan (“NCP”) (40 CFR Part 300). Moreover, the Proposed Plan does not comport with the Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (U.S. EPA 2002a) nor the Sediment Guidance. The Proposed Plan’s inconsistency with the NCP and national sediment policy, as embodied in the Sediment Guidance, concerns the SMWG because these regulations and policies are in place to ensure that site investigations are appropriately scoped, and that the evaluation and selection of remedial alternatives are risk-reduction focused and effectively protect human health and the environment, all in a consistent manner at all contaminated sediment sites.

The SMWG is fully cognizant that the lower Willamette River is a highly complex urban waterbody with multiple sources of impacts – both historical and ongoing – that presents unique and complicated challenges. However, there are certain fundamental principles of the NCP and Sediment Guidance that have not been followed in arriving at the Proposed Plan. These principles are in place to ensure that a site is fully understood, that the remedy selected is effective, implementable, sustainable, and cost-effective, and most importantly, that the remedy selected protects human health and the environment. The NCP requires no less.

II. Executive Summary

The SMWG has been in the forefront of the national arena of contaminated sediment remediation for over 17 years. When the SMWG becomes aware of a guidance document, policy statement, technical issue or proposed remedy relating to contaminated sediment sites which is of national interest and/or concern, it typically submits comments. Those comments have been positive and critical, depending on the substance of the issue or the nature of the proposed remedy in question.

In this instance, the SMWG is very concerned with the direction that the Proposed Plan appears to be heading. As proposed by U.S. EPA, this would be one of the largest sediment removal projects in the United States, with an estimated removal of 1.9 million cubic yards of material at an estimated cost of approximately \$750 million, which appears to be substantially underestimated, without providing any material incremental risk reduction compared to other alternatives as expressly required by the NCP's cost-effectiveness provisions, nor is the proposed remedy sustainable. Consequently, the SMWG recommends that U.S. EPA withdraw the Proposed Plan, that U.S. EPA issue a revised Proposed Plan correcting the deficiencies and errors in the current Proposed Plan, that another remedy that is consistent with the letter and spirit of CERCLA, the NCP and the Sediment Guidance, be chosen, and that the public be given an opportunity to comment on the revised Proposed Plan once issued, as required by law.

The following summarizes our primary concerns with the failure of the Agency's Proposed Plan to follow its own Guidance as well as concerns raised by other governmental experts. Greater detail is included in the body of this document.

III. U.S. EPA's National Contaminated Sediment Policy, As Embodied In The NCP And The Sediment Guidance, Must Be Appropriately Applied To All Contaminated Sediment Sites As A Matter Of U.S. EPA Policy

The Sediment Guidance embodies national policy on contaminated sediment and should be followed at all contaminated sediment sites. The Sediment Guidance was issued for use “by federal and state project managers considering remedial response actions or non-time-critical removal actions” under CERCLA (p. 1-1). It was developed over a period of eight years (1998-2005) and was the subject of comments by the U.S. EPA Regions and the public. The Sediment Guidance provides a risk management decision-making framework to assist with selecting appropriate remedies.

There are at least eight key overarching remedy selection principles in the Sediment Guidance applicable to this site:

- Confirmation that the site is ready for remediation by controlling sources to the greatest extent practicable before commencing remediation (pp. 2-20, 7-17).
- The focus of remediation should be on risk reduction, not mass removal. (pp. 7-1, 7-16). Likewise, the focus should be on contaminated sediment that is bioavailable and bioaccessible. (p. 7-3).
- A realistic, site-specific evaluation of the potential effectiveness of each sediment management option, including dredging, capping, and monitored natural recovery, should be incorporated into the selection of remedies at a site (p. 7-3). At large and/or complex sites, consideration of the use of combinations of remedies is often appropriate (p. 7-3).
- At large or complex sediment sites, the remedy decision frequently involves choices between areas of the site and how they are best suited to particular cleanup methods, rather than a simple one-size-fits-all choice between approaches for the entire site. (p. 7-3).
- The *Sediment Guidance* expressly reiterates and applies the NCP's Nine Remedy Evaluation Criteria (pp. 7-2, 7-7 to 7-13) (Highlight Box 7-3). Of particular relevance at this site are the inconsistencies in the Proposed Plan with the NCP Criteria of protectiveness, short-term and long-term effectiveness, implementability and cost-effectiveness.

- Specifically, the remedy must comply with the provisions of CERCLA and the NCP on cost effectiveness by comparing and contrasting the costs and benefits of the various remedial alternatives as part of the risk management decision-making framework (p. 7-1).
- An appropriate evaluation should be conducted of the expected comparative net risk reduction of the various sediment management options, including a realistic evaluation of their respective advantages and site-specific limitations, especially their risk of remedy potential. For example, at this site, substantial risks that inevitably will result from resuspension and release of COCs during the contemplated lengthy dredging of an estimated 1.9 million cubic yards of contaminated sediment despite use of Best Management Practices (BMPs), much of which is not currently posing unacceptable risk because it is not bioavailable or bioaccessible. (pp. 7-13, 7-14).
- Adaptive management concepts, which recognize the need for reconsideration of the original remedy chosen where new data and/or results of pilots or the initial implementation of the remedy suggest the appropriateness of revising the original approach, should be applied (pp. 2-22, 3-1, 7-16).

In essence, these principles all focus on risk reduction, which the Sediment Guidance reinforces by indicating that contaminated sediment that is not bioavailable or bioaccessible and that is reasonably stable does not necessarily contribute to site risks (p. 7-3). These principles, if applied appropriately, will lead to protective remedies that are also cost-effective as required by CERCLA and the NCP.

In its National Consistency in Superfund Remedy Selection (U.S. EPA 1996), EPA emphasized the “critical importance of maintaining appropriate national consistency in the remedy selection process.” (p. 2). In this context, appropriate consistency means “applying decision-making processes recommended in national policies and guidance using the criteria they lay out, and exercising the built-in flexibility as appropriate to address site-specific circumstances.” (p. 2).

IV. U.S. EPA Has Selected A Proposed Remedy That Inappropriately Requires Portions Of The Site To Be Cleaned Up To A Level That Is Below The Background Levels For The Site, Meaning That The Remediated Areas Will Be Immediately Recontaminated Due To Ongoing Sources And That The RAOs Will Never Be Achieved

Early control of sources has long been a U.S. EPA priority at contaminated sediment sites. In its Contaminated Sediment Management Strategy (1998), the U.S. EPA stated that “before initiating any remediation, active or natural, it is important that point and nonpoint sources of contamination be identified and controlled.” (emphasis added)

The importance of residual sources to the feasibility of achieving remedial objectives is emphasized in the Sediment Guidance (as well as in the Risk Management Principles, U.S. EPA 2002a). The Sediment Guidance provides:

“Identifying and controlling contaminant sources typically is critical to the effectiveness of any Superfund sediment cleanup. Source control generally is defined for the purposes of this guidance as those efforts are taken to eliminate or reduce, to the extent practicable, the release of contaminants from direct and indirect continuing sources to the water body under investigation.”

Sediment Guidance at p. 2-20.

The Sediment Guidance concludes, “[b]y knowing the effectiveness of source control prior to implementing sediment cleanups, the risk of having to revisit recontaminated areas is greatly reduced.” (p. 2-22). Unfortunately, the Proposed Plan does none of these things, contrary to the Sediment Guidance.

An evaluation of the impact of ongoing source loading and potential for sediment recontamination should be conducted before any remediation is undertaken. Even though the potential is at lower levels than many other mega sediment sites, it is inevitable, and it will be above the RAOs for the Site. Consequently, the sediment will be recontaminated above RAOs in the short-term and the long-term.

The Proposed Plan fails to adequately account for ongoing source contribution to the Site. For example, the PRG for PCBs in sediment has been set at 9 ppb. However, the SMWG is aware of studies completed by some PRPs that, as recently as August 2014, demonstrate that Site-wide PCB concentrations will likely never reach lower than 20 ppb, due to ongoing source contributions. See *Sediment Equilibrium Estimates for the Revised Feasibility Study*, August 7, 2014. By setting PRG's below the level that is achievable due to ongoing sources, EPA's evaluation of alternatives is flawed in that it assumes that the chosen alternative "T" will achieve risk reduction that will not, in fact, occur (because the PRGs will never be achieved). In addition, EPA has erroneously concluded that other, less extensive, remedies, such as alternative "B", will achieve significantly less risk reduction even though U.S. EPA's own analysis demonstrates that alternative "B" can achieve a near-equilibrium concentration of PCBs in sediment of 25 ppb within 19 years after construction commenced. EPA should re-evaluate the alternatives based on the risk reduction that is likely to occur, considering the ongoing contribution of uncontrolled sources, rather than the unachievable assumptions that have been used to support the selection of alternative "T".

V. U.S. EPA's Chosen Remedy Is Not Based On Risk Reduction/Risk Management Principles

According to the Baseline Human Health Risk Assessment ("BHHRA"), the major contributor to human health risk at the Site is fish consumption, and the major driver of risk from fish consumption is PCBs. However, U.S. EPA's analysis fails to adequately consider the probability that dredging remedies will result in an increase in fish tissue concentrations for years during and long after the completion of any remedy, due to inevitable resuspension and releases during dredging, despite utilization of Best Management Practices.

U.S. EPA's *Sediment Guidance* provides: "[s]ome contaminant release and transport during dredging is inevitable and should be factored into the alternatives evaluation and planned for in the remedy design." (Emphasis added). The Guidance goes on to state that "[g]enerally, the project manager should assess all causes of resuspension and realistically predict likely contaminant releases during a dredging operation." (p. 6-22). At this Site, the risk of releases during dredging is clearly present despite use of BMPs due to the huge proposed dredged volume and the large number of years to complete it (anticipated to be 7 years, which seems unrealistically low compared to the other mega site dredging projects, particularly given the extraordinarily high dredge rates assumed by the Proposed Plan). In other words, this is no "short-term spike" in concentrations of COCs. For example, the dredging in Commencement Bay in Seattle in 2004 caused a spike in fish tissue concentrations that persisted for years (Patmont, et al., Battelle 2013). After two major dredging projects were completed, concentrations of PCBs in fish tissue are still higher than they were over 20 years ago before dredging began (38 ppb before and 70 ppb after). Simply hoping to "do a better job" dredging than in all past projects is not a realistic expectation and does not constitute sound decision-making.

VI. EPA's Approach Of Assigning Remediation Technologies Based On A Generic Scoring Matrix Is Contrary To The Requirement To Consider The Effectiveness Of Different Technologies Throughout The Site

One of the most perplexing aspects of the Proposed Plan is the use of a simplistic scoring matrix to assign remedial measures throughout the Site, rather than assigning remedies based on location-specific considerations. This is contrary to the *Risk Management Principles*, which states:

EPA's policy has been and continues to be that there is no presumptive remedy for any contaminated sediment site, regardless

of the contaminant level or risk. This is consistent with the NRC report's statement (p. 243) that "There is no presumption of a preferred or default risk management option that is applicable to all PCB-contaminated sediment sites." At Superfund sites, for example, the most appropriate remedy should be chosen after considering *site-specific data* and the NCP's nine remedy selection criteria. All remedies that may potentially meet the removal or remedial action objectives (e.g., dredging or excavation, in-situ capping, in-situ treatment, monitored natural recovery) should be evaluated prior to selecting the remedy. This evaluation should be conducted on a comparable basis, *considering all components of the remedies, the temporal and spatial aspects of the sites, and the overall risk reduction potentially achieved under each option.*

Risk Management Principles at p. 7 (emphasis added).

U.S. EPA's reliance on a simplistic matrix to assign remediation technologies to various areas of the Site, with limited consideration of location-specific conditions, is contrary to the direction of the *Risk Management Principles* and U.S. EPA should re-consider its Proposed Plan by considering more location-specific information.

VII. U.S. EPA Has Selected Remedial Action Levels ("RALs") For Different Areas Of The Site In A Manner That Is Contrary To Basic Risk Management Principles

U.S. EPA does not follow the risk management principles in the NCP and subsequent guidance to ensure that the basis of RAL selection is transparent and clear. In several specific cases, EPA applies different RAL's for the same compound at consecutive river miles without any technical basis or justification. In several cases, contrary to logic, EPA applies a less stringent RAL to an up-gradient source area than to an immediately down-gradient area of lower concentration. In light of the likelihood that the up-gradient area will quickly recontaminate the down-gradient area, these choices defy any technical basis and create the potential for remedy failure.

VIII. U.S. EPA Has Not Adequately Considered The Challenges Of Implementing The Proposed Plan

U.S. EPA has underestimated the implementability challenges that face the Proposed Plan. Issues of implementability include impediments posed by underwater utilities in a major urban waterway like the Port of Portland, submerged debris and other obstacles and the need to accommodate bridge and maritime traffic. In addition, upland sites must be secured for managing dredged material. Perhaps most significantly, U.S. EPA has assumed that dredging will occur 24 hours/day, 6 days/ week during the dredging season, with no accommodation for weather, mechanical failure, unanticipated obstacles or interruptions to accommodate ship traffic. As a result, the projected construction time for the Proposed Plan (7 years) is most likely understated based on our knowledge of implementation of remedies around the country. Community acceptance of a much longer term construction period has not been adequately assessed because U.S. EPA has essentially assured the public that construction will be completed in 7 years. U.S. EPA should withdraw the Proposed Plan while it reconsiders the very significant implementability issues posed by the proposed remedy.

IX. U.S. EPA Failed To Make Quantitative Or Detailed Short-Term And Long-Term Effectiveness Evaluations

U.S. EPA has not provided detailed or quantitative evaluations of the short-term or long-term effectiveness of the alternatives under consideration. Instead, U.S. EPA has offered only qualitative or relative evaluations of short-term and long-term effectiveness, characterizing the effectiveness of different alternatives as “least,” “low,” “moderate,” “better,” or “best.” Such a non-quantitative approach is contrary to the *Sediment Guidance* and, as will be discussed below, fails to comply with the requirement of CERCLA and the NCP to quantitatively evaluate

effectiveness in order to allow meaningful public comments. Regarding the remedy effectiveness evaluation, the *Sediment Guidance* states:

The remedy selection process for sediment sites should include a clear analysis of the uncertainties involved, including uncertainties concerning the predicted effectiveness of various alternatives and the time frames for achieving cleanup levels and, if possible, remedial action objectives. The uncertainty of factors very important to the remedy decision should be quantified, so far as this is possible. Where it is not possible to quantify uncertainty, sensitivity analysis may be helpful to determine which apparent differences between alternatives are most likely to be significant.

Sediment Guidance at v (emphasis added).

EPA's long-term and short-term effectiveness evaluations fail to fulfill the letter and spirit of the *Sediment Guidance* for a quantitative evaluation of effectiveness.

X. U.S. EPA Ignores More Recent Data Showing Natural Recovery Occurring Faster Than Expected

U.S. EPA's long-term effectiveness evaluation is also flawed because U.S. EPA has ignored information on small mouth bass tissue data indicating that some areas of the Site are already approaching equilibrium levels. See *Lower Willamette River Smallmouth Bass Data Monitored Natural Recovery Analysis*, AnchorQEA, March 18, 2013. This data supports the conclusion that a large portion of the Site will be at or near equilibrium levels through natural attenuation by the time remedy implementation will occur. However, this information has not been addressed in U.S. EPA's Proposed Plan and represents a fatal flaw in the assumption being made to support the Proposed Plan's remedy.

XI. U.S. EPA Has Systematically Underestimated Cost And Duration Of Its Chosen Remedy

When U.S. EPA presented its preferred alternative to the National Remedy Review Board (“NRRB”) in November 2015, EPA estimated that the remedy would cost \$1.4 billion. While there is reason to believe that number was a significant under-estimate, in the Proposed Plan, EPA estimates the cost will be only \$746 million. Although there are some differences between the preferred remedy presented to NRRB and the Proposed Plan, the differences are not sufficient to explain a nearly 50% reduction in cost. For example, the preferred remedy included dredging approximately 1.9 million cy, while the Proposed Plan calls for dredging an identical amount (1.9 million cy); the preferred remedy included 83 acres of capping, while the Proposed Plan has 64.1 acres of capping. The preferred remedy included 455,000 cy ex-situ treatment and the Proposed Plan calls for up to 208,000 cy ex-situ treatment. In short, there is no apparent explanation for the dramatic decrease in the estimated cost of the Proposed Plan, which suggests that the cost of the Proposed Plan is now severely underestimated.

XII. U.S. EPA Failed To Conduct An Adequate Cost-Effectiveness Evaluation

The Proposed Plan is not cost-effective as required by CERCLA, the NCP and the Sediment Guidance. CERCLA requires that any remedial action that is selected must be “cost-effective.” 42 USC 9621(a). The NCP states, “[e]ach remedial action selected shall be cost-effective, provided that it first satisfies the threshold criteria set forth in § 300.430(f)(1)(ii)(A) and (B). Cost-effectiveness is defined as when “costs are proportional to [the remedial alternative’s] overall effectiveness.” 40 CFR §300.430(f)(1)(ii)(D).

As U.S. EPA stated in its Superfund Guidance, “cost-effectiveness is concerned with the reasonableness of the relationship between the effectiveness afforded by each alternative and its

costs compared to other available options.” U.S. EPA 1999. Moreover, “if the difference in effectiveness is small but the difference in cost is very large, a proportional relationship between the alternatives does not exist.” U.S. EPA 1990, Preamble to NCP.

These proportionality requirements were reiterated by U.S. EPA in the Sediment Guidance. Regions must select remedies that are cost effective (p. 7-17) and should “compare and contrast the cost and benefits of various remedies.” (p. 7-1).

In disregard of both the NCP and Section 7.1 of the Sediment Guidance, U.S. EPA’s remedial alternative evaluation fails to appropriately evaluate and compare the relative benefits and costs for the remedial alternatives. As discussed above, U.S. EPA has failed to quantitatively evaluate either the short-term or the long-term effectiveness of the alternative remedies, resulting in a serious failure to comply with the NCP requirements spelled out in detail above. The proportional relationship between the difference in effectiveness and the difference in cost between alternatives, is expressly required by the NCP and the Proposed Plan fails to comply with this requirement. In fact, U.S. EPA’s perfunctory cost-effectiveness analysis purports only to compare the cost of alternatives E and I, which U.S. EPA conclusorily states will have a similar degree of effectiveness and risk reduction. U.S. EPA does not even attempt to characterize the cost-effectiveness of its chosen alternative “I” compared to any of the other alternatives under consideration other than E. Accordingly, U.S. EPA has failed to demonstrate that the costs of the proposed remedy are proportional to its effectiveness, as required by the NCP.

As discussed above, U.S. EPA dramatically reduced its cost estimate for its chosen alternative after submitting it to the NRRB for reasons that are entirely unclear. This dramatic reduction in the cost estimate, which does not appear to be based on any substantive changes to

the proposed remedy that are sufficient to justify the cost reduction, raises further questions about the reliability or accuracy of U.S. EPA's cost-effectiveness analysis.

In short, U.S. EPA's cost-effectiveness analysis is insufficient because: (a) it only compares the cost of two remedy alternatives, not all of them; (b) U.S. EPA has not even attempted to quantitatively evaluate the short-term and long-term effectiveness of any of the alternatives, resulting in non-compliance with the NCP's cost-effectiveness requirement; and (c) U.S. EPA has unjustifiably reduced its cost-estimate for the chosen alternative, making any cost-effectiveness claims invalid and inconsistent with the NCP and the Sediment Guidance.

XIII. Conclusion

The *Sediment Guidance* provides a scientifically sound, risk-based approach to addressing contaminated sediment sites. Sediment sites present challenging problems, but following the policy and procedures in the *Sediment Guidance* at all contaminated sediment sites, across the country is critical to ensure that an appropriate remedy is selected which follows U.S. EPA's National Contaminated Sediment Policy and is capable of being successful in reducing risk, based on site-specific conditions. In contrast, Proposed Plan deviates from CERCLA, the NCP and the Sediment Guidance in several critical ways including ignoring the impact of ongoing sources, which inevitably will result in some recontamination (but clearly enough to prevent the site's RAOs from being achieved), incomplete site characterization, and inadequate and inappropriate remedy evaluation. Accordingly, the Proposed Plan should be withdrawn and reissued to correct the identified errors and other deficiencies, the public should be given an opportunity to comment on the revised Proposed Plan, as required by law, and the remedy selected in the Proposed Plan replaced with a proposed remedy which is fully consistent with CERCLA, the NCP and the *Sediment Guidance*.

The SMWG would be pleased to answer any questions about its comments on the Proposed Plan. For further information, please feel free to contact the SMWG's Coordinating Director, Steven C. Nadeau, c/o Honigman Miller Schwartz and Cohn LLP, 2290 First National Building, 660 Woodward Avenue, Detroit, MI 48226, (313) 465-7492, snadeau@honigman.com.

Respectfully submitted,

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Exhibit A

SMWG Members

ALCOA, Inc.
Ashland, Inc.
Atlantic Richfield (a BP company)
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